

MASS. - Public Works, Dept of

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# 1971 HIGHWAY PLANNING PROGRAM

HPR 1 (6)

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Transportation  
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Development



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

CALENDAR YEAR 1971



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MASSACHUSETTS HPR-1 (6) WORK PROGRAM

CALENDAR YEAR 1971

PART I - PLANNING	\$2,832,900
PART II - RESEARCH	<u>627,500</u>
TOTAL	\$3,460,400



### HIGHWAY PLANNING OBJECTIVE

Planning in general connotes a scheme or a method for accomplishing a desired objective--deciding in advance what should be done. Highway planning is a continuous process aimed at maintaining, at all times, the best balanced state of highway transportation efficiency throughout the entire highway system. It is the orderly and continuing assembly of information about highways, including the history of highway development, their extent, dimensions and condition, use, economic and social effects, costs, and future needs. It includes the analysis of this information for use by the administration for the development and management of the highway system in an efficient and economic manner. It presumes the establishment of goals or objectives.





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

CALENDAR YEAR 1971

<u>Study No.</u>	<u>Title of Study</u>	<u>Est. Cost 1971</u>
1-0	<u>ADMINISTRATION AND CONTROL</u>	
1-1	Planning Administration	\$ 120,000 .
2-0	<u>ROAD INVENTORY</u>	
2-1	Rural and Urban Inventory	275,000
2-2	Interstate Traveled Way Flow Map	5,000
2-3	Bridge Record	8,000
3-0	<u>MAPPING</u>	
3-1	Mapping - Rural and General	40,000
3-2	Urban Area Boundaries	12,000
4-0	<u>TRAFFIC</u>	
4-1	Traffic Volume Counting	320,000
4-3	Vehicle Weight and Characteristics	25,000
4-6	Special Origin and Destination Surveys	25,000
4-7	Forecasting	85,000
5-0	<u>HIGHWAY STATISTICS</u>	
5-1	Rural and Urban Highway Mileage Analysis	36,000
5-2	Motor Vehicles, Operators and Fuel	1,000
5-3	Local Highway Finance Analysis	17,000
6-0	<u>ECONOMIC AND FISCAL</u>	
6-1	Economic Impact Study - Route 128	5,000
6-2	Economic Impact Study - Routes I-91, I-291 Springfield	100,000
6-3	Economic Impact Study - Route I-495	5,000



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

CALENDAR YEAR 1971

<u>Study No.</u>	<u>Title of Study</u>	<u>Est. Cost 1971</u>
7-0	<u>SYSTEMS AND PROGRAMMING</u> <u>STATEWIDE HIGHWAY TRANSPORTATION STUDY</u>	
7-1	Classification Phase	5,000
7-2	Highway Needs Phase	5,000
7-3	Fiscal Phase	50,000
7-4	Statewide Traffic Assignments	10,000
8-0	<u>URBAN TRANSPORTATION PLANNING</u>	
8-1	Eastern Massachusetts Area	155,000
8-1A	Boston Area Transportation Study	59,200
8-1B	Central Merrimac Valley Study Area	18,300
8-1C	Lowell Study Area	18,300
8-1D	Old Colony (Brockton) Study Area	18,300
8-1E	Boston Transportation Planning Review	500,000
8-1F	North Shore Planning Review	100,000
8-2	Southeastern Massachusetts Study Area	62,000
8-3	Springfield Urbanized Area	29,600
8-4	Worcester Study Area	88,000
8-5	Fitchburg-Leominster Urbanized Area	63,200
8-6	Pittsfield Urbanized Area	39,000
8-7	Comprehensive Transportation Planning for Small Urban Areas	230,000
8-10	United States Census - 1970	25,000
9-0	<u>SPEED AND TRAFFIC SERVICE STUDIES</u>	
9-1	Accident Report by Systems	7,000
9-2	Interstate System Accident Research Study	7,000
11-0	<u>SPECIAL STUDIES</u>	
11-1	Revised Interstate Cost Estimate	—
11-2	New Transportation Developments	25,000
11-3	Goods Movement Study	10,000
11-4	National Classification and Needs Study	225,000
11-6	Effect of MBTA South Shore Extension on Southeast Corridor Travel Patterns	4,000
	<b>TOTAL</b>	<b>\$ 2,832,900</b>



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

1-1 Planning Administration

This item is for cost administration of the Planning portion of the 1970 Work Program, including salaries of the planning portion of the Director, Deputy Director, Highway Engineer, and supervising, secretarial and clerical personnel which cannot be charged directly to specific projects in the Work Program.

Estimated 1970 Cost: \$150,000

Estimated 1971 Cost: 120,000

Supervisor: George L. Wey



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

2-1 Rural and Urban Road Inventory

Project Objective

Good management and administration of service organization, requires basic knowledge of its physical plant. The highway, together with its structures, is the physical plant. The inventory of all highway facilities is necessary to provide basic data for an orderly development of highway systems and programs, to measure highway needs and to estimate the cost of satisfying them. The inventory is made as continuously updated for information to prepare maps, completion of statistics showing mileage and characteristics, dimensions and types of highways, kinds of structures and other pertinent data; the evaluation of needs of a highway by comparing the existing with the appropriate standard; and a periodic evaluation of the adequacy of each link in the highway system.

1970

In 1970 a late delivery of printer coding forms, a curtailment of funds, failure to receive the full complement of personnel and equipment requested and the early advent of Winter weather in Western Massachusetts necessitated having to make certain changes in the previously announced 5-year Inventory Program Schedule. However, we remain confident that the total schedule announced





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

2-1 Rural and Urban Road Inventory (Continued)

will be met, barring further cutbacks.

Field work was completed in the remainder of Hampshire County and all of Suffolk County. Hopefully, the Counties of Hampden and Essex will be completed by the end of 1970.

The rearranged Inventory Schedule is as follows:

<u>Year</u>	<u>Counties</u>
1st.	Berkshire - Franklin - Suffolk- Hampshire (part)
2nd.	Hampshire - Hampden - Essex
3rd.	Worcester - Middlesex
4th.	Norfolk - Plymouth - Bristol
5th.	Barnstable - Dukes - Nantucket

Office coding, keypunching and editing will be completed for the remainder of Hampshire County and for all of Suffolk County. This work will also begin for those cities and towns in Essex County where the field work was completed in 1970.

Inventory listings for Berkshire County, Franklin County and part of Hampshire County were transmitted to District Highway Engineer and city and town officials in these respective counties.

Estimated 1970 Cost: \$300,000

Supervisor: James F. O'Halloran



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

2-1 Rural and Urban Road Inventory (Continued)

In 1971 it is proposed to perform the following items of work:

- 1) Complete coding of forms for all cities and town in Hampden County.
- 2) Complete office coding, keypunching, check and generate tabulations for the remainder of Hampshire County.
- 3) Complete office coding, keypunching, check and generate tabulations for the completed portion of Essex County.
- 4) Transmit completed inventory listings of Hampshire, Suffolk, Hampden and Essex Counties to District Highway Engineers and city and town officials.
- 5) Inventory of all roads and streets open to public travel in Worcester and Middlesex Counties.
- 6) Update inventory files for Berkshire and Franklin Counties based on information received from local officials of the RI-VI Form, Construction and Improvement Record.

Estimated 1971 Cost: \$275,000

Supervisor: James F. O'Halloran



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

2-2 Interstate Traveled-Way Traffic Flow Map

1970

In 1970 the 1969 traffic volume data was processed and transmitted to the Federal Highway Administration. Also traffic volume counts for the 1970 Study were taken.

Estimated 1970 Cost: \$ 3,500

1971

In 1971 the 1970 traffic volume data will be processed and the traffic volume counts forwarded to the Federal Highway Administration. Also traffic volume counts for the 1971 Study will be taken.

The comparison of 1960-1970 Interstate Traveled-Way traffic will be made.

Estimated 1971 Cost: \$ 5,000

Supervisor: Harold W. Kallin



2-3 Bridge Record

Project Objective

The purpose of this continuing study is to provide the Department of Defense and civilian agencies with proper knowledge of the adequacy of bridge facilities. It is particularly important for the movement of freight, that the appropriate agencies have knowledge of the critical dimensions and capacity of bridge structures. This information permits the selection of alternate routings for vehicles of extreme dimensions or weight in the event of loss of part of the highway network or other forms of transportation.

1970

In 1970, the Bridge Record file was updated December 31, 1969. The 1969 Bridge Record was published in the Spring of 1970 and copies were sent to the Federal Highway Administration and to the Districts.

The report included a complete updating and reformatting of the records. During the year meetings were held jointly with the Federal Highway Administration and the neighboring states to coordinate highway route crossings at the Massachusetts State lines. The proposed Highway Functional Classifications of I, II and III as recommended by the Bureau of Transportation Planning and Development served as the basic network for the Revised Record. A new index map was prepared for this report.

Estimated 1970 Cost: \$ 10,000





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

2-3 Bridge Record (Continued)

1971

The Annual Bridge Record will be updated starting in January and a report prepared by April for distribution to the United States Department of Transportation and to the Department of Defense.

Estimated 1971 Cost: \$ 8,000

Supervisor: Peter E. Murphy



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

3-1 Mapping - Rural and General

1970

During this period work continued on the update file to be used to update the county series maps planned for 1972. Reproducible maps of the Federal Aid Systems were prepared. Recommendations of revisions of the Federal Aid Systems were prepared and processed for approval of the Federal Highway Administration.. Urban area boundaries have been delineated on the Federal Aid System reproducibles.

Estimated 1970 Cost: \$20,000

1971

During this period the work program will consist of the following elements:

1. Preparing Federal-Aid Route Revisions and Adjustments
2. Preparing Federal-Aid Primary Type II System submissions
3. Production of Urban Area Plans based on 1970 census
4. Production of new Federal-Aid Route Systems plans (updating)
5. Production of single sheet map of Massachusetts showing: Federal-Aid Route Systems and State Highway Route System



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

3-1 Mapping - Rural and General (Continued)

6. Production of single sheet maps of  
Massachusetts traffic counts
7. Review of Federal-Aid Systems at state  
lines together with coordinating "like-  
route" systems with corresponding route  
systems in adjoining states
8. Preparing Federal-Aid Route Log
9. Continue collection of update data for  
1972 edition of County Series, General  
Highway Maps

Estimated 1971 Cost: \$40,000

Supervisor: George Jenness

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

RESEARCH REPORT

NO. 1000

1950

1951

1952

1953

MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

3-2 Urban Area Boundaries

1971

Necessary gathering of data and appropriate scale maps will be prepared for redesignation of urban area boundaries based upon the 1970 census.

Estimated 1971 Cost: \$ 12,000

Supervisor: George Jenness





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

4-1 Traffic Volume Counting

Project Objective

Traffic Volumes are measures of usage of highway facility or system and is basic for needs in planning design, maintenance, traffic control, programming and general administration of the highway program. Average Daily Traffic (ADT) information serves as a basis for forecasting traffic volumes, provides fundamental information to determine design hour traffic volumes, which is used for geometric highway design purposes, provides an indication of growth trends, and for geometric classifications of roads by functional and administrative systems. This information has many uses by private enterprise, particularly those types dependent upon motor vehicle travel for a substantial part of their business.

The objective of the traffic counting program is to obtain data for comprehensive estimates of traffic volumes which are within reasonable tolerances of accuracy at a minimum of cost.

1970

In 1970 the following work was accomplished:

1. The field operational phase included:

Traffic volume counts at 21 permanent stations

Traffic volume counts at 80 control stations  
(22 days/month)



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

4-1 Traffic Volume Counting (Continued)

Traffic volume counts at 1200 coverage stations  
(48 hours)

Special traffic volume counts of variable duration for Highway Design and Urban Transportation including turning movements and vehicle classifications

2. Work on the Traffic Volumes Report for both 1968-1969 progresses slowly due to a new factoring process and computer change-over. A report for 1969 was published.
3. A program was developed for the installation of loops for detectors in proposed construction or resurfacing projects, so that in the future more accurate coverage or special counts could be taken with portable loop detection equipment and provide more flexibility of permanent stations.
4. The application of the processes developed under the traffic grouping project with Massachusetts Institute of Technology was utilized on the traffic volume data obtained from the 1969 Traffic Counting Program.
5. Special counts were taken on all arterials that would be influenced by the inauguration of transit service on the South Shore Line to indicate the "before" situation.

Estimated Cost: \$280,000

1971

1. During calendar year 1971 the field operational phase of permanent, control, and coverage stations and specific counts will continue. Such additional counting stations developed under the loop installation program will be included.



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

4-1 Traffic Volume Counting (Continued)

2. Traffic Volumes Report for 1970 will be published.
3. Traffic counting equipment maintenance seminar will be conducted for field personnel of the Districts.
4. The program for installation of loops for detectors will be continued.
5. The processes developed under the traffic grouping research project will be applied to the data obtained from the 1970 Traffic Counting Program.
6. Traffic Counts including vehicle occupancy and classification on all arterials as in item #5 - 1970 will be taken 1 month after the South Shore Transit Line commences service and again 6 months later. The data will be analyzed and a report prepared on the effect of transit line service on motor vehicle passenger travel in the corridor.

Estimated 1971 Cost: \$320,000

Supervisor: Harold W. Kallin



4-3 Vehicle Weight and Characteristics

Project Objective

The annual truck data are the basis for estimating annual travel by each type of truck, the ton-miles of cargo hauled by highway, year-to-year changes in axle and gross weight frequencies on the highways, and comparison of the characteristics of actual usage with administrative policies. The results are used at the State, regional and national level in the consideration of transportation policy, allocation of highway costs and revenue, size and weight regulations, establishment of geometric design criteria related to the size and weight of vehicles, in pavement design for the establishment of procedures and criteria, and for a variety of special administrative, planning, design, and research studies. The continuity of the trends beginning in 1963 provides important indications of changing patterns in transportation by highway compared to rail and other modes, and provides a measure of the effects of changing policies and regulations, changes in economic activity, and technological advances.

1970

In 1970, the 1969 Truck Weight Study data was processed using the new format established by the Federal Highway Administration and transmitted to the Federal Agency. Field data collection for







MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

4-3 Vehicle Weight and Characteristics (Continued)

the 1970 Study was conducted in July and August at fourteen (14) locations.

The 1970 Truck Weight Study data has been analyzed, processed, and delivered to the Federal Highway Administration.

Estimated 1970 Cost: \$ 25,000

1971

In 1971 the Annual Truck Weight Study will be conducted in accordance with the requirements of the Federal Highway Administration at the same stations used in the previous year.

Estimated 1971 Cost: \$ 25,000.

Supervisor: Harold W. Kallin



4-6 Special Origin and Destination Surveys

Project Objective

In the location of new routes, relocation of existing routes, or deciding which of two or more alternates should be improved to serve the highway users most effectively, it is necessary to comply with the majority travel desires. Origin and destination studies yield information concerning these desires and the frequency of trips distributed in the total area of travel. By knowing the distributions of the trips the relative effectiveness of two or more different routes used between the same origins and destinations can be compared and evaluated. In planning roads for the future, the origin and destination data, together with other reasonably predictable elements, such as future traffic volumes and land use, provide indications of future needs.

The objectives of origin and destination studies are:

- a. to obtain the facts of the current use of the road plant with relation to the origins and destinations of the trips
- b. to develop methods which will permit the extension of present origin and destination observations and anticipation of future situations

1971

It is anticipated that special in-house Origin and Destination Studies will be made at various locations in the state for which a detailed work plan will be submitted to the Federal



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

4-6 Special Origin and Destination Surveys (Continued)

Highway Administration for review and approval before progressing with the project.

Estimated 1971 Cost: \$25,000

Supervisor: Harold W. Kallin



4-7 Traffic Analysis and Forecasting

Project Objective

New highways or improvements of existing highways should not be based on current traffic volumes alone, but on the future traffic expected to use the facility. Desirably, a highway should be designed to accomodate the traffic that will occur within the life of the facility under reasonable maintenace. . The maximum period accepted by many highway engineers is in the range of 15-25 years. A period of 20 years is widely used as a basis for design. Estimating traffic beyond this period on a specific facility usually is not justified because of probable changes in the general regional economy, population and land use along the highway which cannot be predicted with any degree of assurance.

Projecting traffic precisely to some future year on a given highway facility may not be practical but traffic can be estimated with reasonable accuracy where sufficient current and past traffic data are available, and contemplated or likely developments within the near future that are apt to affect traffic flow are known.

The objective of traffic forecasting and analysis studies is the development and testing of assumptions and their use for traffic forecasting as an aid in establishing future highway needs.

1970

Under this item processing of design traffic data requests





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

4-7 Traffic Analysis and Forecasting (Continued)

from various segments of the Department relative to proposed highway improvements were completed. During Fiscal 1970, Seventy-three (73) projects were analyzed and forecasts developed for projects presented.

Estimated 1970 Cost: \$65,000

1971

Work under this item will consist of analyzing and developing design traffic forecasts for highway improvements. Requests for forecasts will be initiated by other units of the Department. Development of a procedure manual for traffic analysis and forecasting will be accomplished.

Estimated 1971 Cost: 85,000

Supervisor: James F. Allen



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

5-1 Rural and Urban Highway Mileage Analysis

Project Objective

The objective of mileage statistics is to provide information on mileage of each administrative class comprising the total highway network including data on road type, surface width, traffic volume and population group. This data is fundamental for proper analysis with highway classifications, cost allocations, highway needs, and development of highway programs essential for sound highway planning and effective highway administration.

1970

During 1970, in accordance with procedures and instructions in Highway Planning Manual (volume 5, Chapter I), data regarding changes in highway mileage due to construction and reconstruction was recorded and transferred to punch cards. Computer programs were developed and data processed for the preparation and completion of the Annual Mileage Reports.

All the required reports were completed and forwarded and distributed:

1. "Local Road Mileages", December 31, 1969
2. "Highway Mileage Statistics", 1969

Estimated 1970 Cost: \$32,000

1971

During this period, resurvey and updating mileage records will



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

5-1 Rural and Urban Highway Mileage Analysis (Continued)

continue along with data processing and program development necessary for preparation of the Annual Mileage Reports.

Readjustments on our Local Road Records as a result of the recent Statewide Road Inventory Project will continue. A procedure manual will be developed for this item of work.

Estimated 1971 Cost: \$36,000

Supervisor: Frank V. Giannino



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

5-2 Motor Vehicles, Operators and Fuels

Project Objective

Basic statistical information on motor-vehicle registrations, motor-fuel consumption, and highway-user tax revenues collected at the state level is essential for sound highway planning and effective highway administration. These data are used in making projections of the size and growth of highway vehicle registrations, motor-fuel consumption, and revenues derived therefrom, in connection with the development of studies of highway needs both long- and short-range, of financial policies to support highway programs, and with the formulation of highway policy.

The objective of the assembly of statistics on motor-vehicle registrations and fuel consumption is to make possible studies of motor vehicles and usage of motor fuels for determining highway-user tax yields and vehicle and fuel tax policies.

1970

Tabulations, graphs, projections and related data were updated and kept current during the year.

Estimated 1970 Cost: \$1,000

1971

Data and other related information will be collected and tabulated and records kept current in conjunction with similar functions performed in the Finance Section (7-3). Appropriate





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

5-2 Motor Vehicles, Operators and Fuels (Continued)

forms and reports will be completed and submitted to the relevant agencies. A procedure manual will be developed for record and guidance.

Estimated 1971 Cost: \$1,000

Supervisor: Herbert A. Nolan



5-3 Local Highway Finance Analysis

Project Objective

Highway finance statistics are essential for sound highway planning and effective highway administration. The data are needed to determine the financial support for, and expenditure on, highways by Federal, State, and local governments, including toll and other types of authorities; intergovernmental relationship in highway financing; grants-in-aid programs; and bond financing and debt management for highways. These data are also fundamental in development of highway needs, financial planning, and a long-range program and priorities within that program for capital improvements in the highway systems of the State.

The objective of reporting of financial statistics is to obtain pertinent financial information on highway taxation and finance and related subjects necessary for the formulation of highway policy and for the administration of highway matters.

1970

During this period the work included:

1. Preparation, computation, and distribution of financial and statistical data on cash revenues and direct disbursements and allocations in connection with financing, construction, maintenance and allied functions on local roads of every city and town in the Commonwealth.
2. Analysis of the town and city financial reports pertaining to local highways.



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

5-3 Local Highway Finance Analysis (Continued)

Group V - Eleven Standard Metropolitan Statistical  
Areas  
Massachusetts Port Authority  
Massachusetts Turnpike Authority  
Massachusetts Parking Authority

Estimated 1970 Cost: \$10,000

1971

A similar work program will be followed in 1971 in conjunction with the Finance Section (7-3) functions covering all Federal and State fiscal matters relating to highways in addition to local finance as detailed above. A procedure manual will be developed for guidance and record.

Estimated 1971 Cost: \$17,000

Supervisor: Herbert A. Nolan



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

5-3 Local Highway Finance Analysis (Continued)

3. Audits as necessary to verify the actual receipts and expenditures reported to the Department of Corporations and Taxation.
4. Recording analysis and detailing of all monies received and expended for all local highways and affiliated functions for every city and town in the Commonwealth in accordance with the prescribed procedures of the Federal Highway Administration.
5. Maintenance and analysis of records of all receipts and direct current expenditures for highways and placement in proper categories for all cities and towns and projection of future maturities.
6. Maintenance and analysis of official records of all bonds and notes issued during fiscal year and changes of debt status and maturity schedule.
7. Maintenance of records of all statements of interest and redemptions and of purposes for which money is used including debt service on local obligations.
8. Maintenance of records of distributions to each city and town on all Chapters 81-90 and Bond Issues for Local Roads of the General Law Assignments.
9. Collection and recording of this data including a great deal of detail and breaking down of accounts to fulfill the categories required by the Bureau of Public Roads 535 Report such as:

Group I - Rural town roads (129 Towns)

Group II - Municipal roads, areas under 5,000 population (50 Towns)

Group III - Municipal roads, areas 5,000-49,999 population (132 Towns - 20 Cities)

Group IV - Municipal roads, areas over 50,000 population (19 Cities - 1 Town)





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

6-1 Economic Impact Study - Route 128

1970

A start was made on the study design.

Estimated 1970 Cost: \$500

1971

The proposed work program consists of studying and analyzing the relationship between development and traffic in the Route 128 area, evaluating alternate solutions to problems created by the development, and recommendations on applying the knowledge gained to other areas with similar development potential. A comparison will be made with the earlier Route 128 study.

The work in 1971 is proposed as a detailed study design for a consultant contract and agreement with the Department of Commerce and Development for a joint project.

Estimated 1971 Cost: \$5,000

Supervisor: Robert L. Campbell



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

6-2 Economic Impact Study - Routes I-91 - I-291 Springfield

1971

The proposed work program consists of studying and analyzing the effect of the interstate highways on land values, employment, relocations, new businesses, lost business, expanded business, tax losses, tax gains and pertinent related items.

It is anticipated that the work will be performed by a consultant and extend into 1972. Guidance will be obtained from Highway Research Board Reports in detailing the work program.

Estimated 1971 Cost: \$100,000

Supervisor: Robert L. Campbell



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

6-3 Economic Impact Study - Route I-495

1971

The proposed work program consists of studying and analyzing the effect of the interstate highway on land values, employment, relocations, new businesses, lost business, expanded business, tax losses, tax gains and pertinent related items.

The 1971 work will consist of the study design and negotiations for a consultant contract. It is anticipated that the work will be performed by a consultant and extend into 1972. The proposed work will be a follow up of a series of five reports completed in 1963 and 1964.

Estimated 1971 Cost: \$5,000

Supervisor: Robert L. Campbell



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

7-1 Classification Phase

Project Objective

While classification studies can be, and are, conducted independently, they are frequently incorporated with statewide highway needs and fiscal studies. A comprehensive review of systems classification is an essential first phase of such statewide needs studies. Reclassification might well be one of the recommendations evolving from such a study.

The objective is the establishment of defined classes or systems of highways which serve two broad objectives: (1) rational assignment of jurisdictional responsibility, and (2) provision of a framework for orderly and efficient highway system development. Within such a framework, the assessment of needs may be realistically related to present and projected needs. This in turn will make possible relatively stable long-range financial and physical plans for system development.

1970

During 1970 the following activities were undertaken:

1. Field manuscripts showing the Statewide Functional Classification of all roads and streets for use in the Road and Street Inventory Program were prepared.





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

7-1 Classification Phase (Continued)

2. The initial development of the Federal-Aid Primary Type II networks in urban areas in conjunction with the TOPICS program, with Type II systems for 74 communities having been developed to date.
3. Furnishing classification data to various consultant firms in connection with their work on master plans (701 Studies) for local communities.
4. Continuous liaison with Department, State, and local officials.

Estimated 1970 Cost: \$5,000

1971

During 1971 it is anticipated that the activities undertaken during the previous year will continue.

Estimated 1971 Cost: \$5,000

Supervisor: Gerald J. Rourke



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

7-2 Needs Phase

Project Objective

Ever increasing demands for highway services have forced continued reevaluation of the highway transportation situation to determine the requirements for the highway programs. In many States, comprehensive studies are repeated periodically thus furnishing to legislators and administrators current information as to the balance between needs and fiscal plans.

A comprehensive Statewide highway needs study is needed to:

- a. Identify the social and economic factors which create and maintain a demand for the improvement of highway transportation facilities and services, and measure them.
- b. Determine what classes and types of highways, and how many miles of each class or type are needed to supply present and expected future needs, and what it will cost to own them.
- c. Devise a plan for financing an adequate long-range highway program.
- d. Suggest how a network of highways can be administered most effectively.

1970

Furnishing needs data to various consultant firms in connection with their work on master plans (701 Studies) for local communities.

Developed needs information, capacities, conditions and type of work on city and town maps to be used by the Department and



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

7-2 Needs Phase (Continued)

consultant firms in connection with the TOPICS program.

Estimated 1970 Cost: \$5,000

1971

It is anticipated that the activities undertaken during the previous year will continue.

Estimated 1971 Cost: \$5,000

Supervisor: James F. O'Halloran



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

7-3 Fiscal Phase

1970

The continuing process of the Fiscal Phase of the State-wide Highway Transportation Study was initiated including maintenance of current status for all elements of the initial phase in addition to handling new related reports and analyses. Study background reports were reviewed for future publication.

Estimated 1970 Cost: \$50,000

1971

Maintenance of current status for the continuing Finance Study will involve attention to original tables, graphs, reports, projection and written analyses. Such material will be augmented and new material developed from the reports of Federal, State, County and local government agencies as well as from transportation authorities, private organizations and other sources. An increase in the number of individual requests for information over and above regular reports and analyses can be anticipated in addition to new annual statistical functions.





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

7-3 Fiscal Phase (Continued)

The annual work items will include the following routine procedures:

1. Collection and compilation of current statistics.
2. Tabulation of new finance data.
3. Continuing review and revision of study projections and forecasts.
4. Graphical presentation of historical and new statistical information.
5. Written analyses of new finance data and projections.
6. Provision of data, information and reports to other agencies.

Maintenance and refinement of finance information and production of regular supplementary and special reports will involve compilations for use in future updates of earnings credit, incremental, vehicle classification and other analyses.

Special projects planned for 1971 will include publication of finance study background reports and mylar charts and graphs of more significant study tables.

Estimated 1971 Cost: \$50,000

Supervisor: Herbert A. Nolan



7-4.5 Statewide Traffic Assignments

Project Objective

The statewide transportation planning process involves the examination and evaluation of several plans or variations of plans which may be proposed. The evaluation procedure includes estimating the volume of traffic that would use the various facilities of a highway system, utilizing traffic assignment techniques which allow the transportation planner to test the adequacy of existing highway facilities to handle future traffic, and to evaluate the effectiveness of proposed facilities and systems. In addition, traffic assignment techniques may also be applied to the analysis of mass transit facilities. Assignment by electronic computer provides a consistent, reproducible method for testing alternate systems rapidly, relatively inexpensively, and with a minimum amount of manual work.

The primary purposes of traffic assignment are:

- a. To assist in the development and evaluation of alternate future transportation systems.
- b. To assist in the examination of the effects of improvements and additions to the existing network facilities.
- c. To determine zonal time separation to aid in the development of the trip distribution models.
- d. To provide the basis for estimating design hour volumes, including turning movements at intersections.
- e. To assist in development of construction priorities by assigning trips forecast for an intermediate year to the network for that year.



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

7-4 Statewide Traffic Assignments

1970

No work scheduled.

1971

It is proposed to develop a statewide highway network consisting of the first three functional classes of highway and a forecasting mathematical model for traffic assignment.

Estimated 1971 Cost: \$10,000

Supervisor: Walter Kondo



PITTSFIELD  
STUDY AREA

FITCHBURG-LEOMINSTER  
STUDY AREA

LOWELL  
STUDY AREA

CENTRAL MERRIMACK VALLEY  
STUDY AREA  
(Lawrence-Haverhill)

BOSTON METROPOLITAN  
STUDY AREA

OLD COLONY (BROCKTON)  
STUDY AREA

SPRINGFIELD  
STUDY AREA

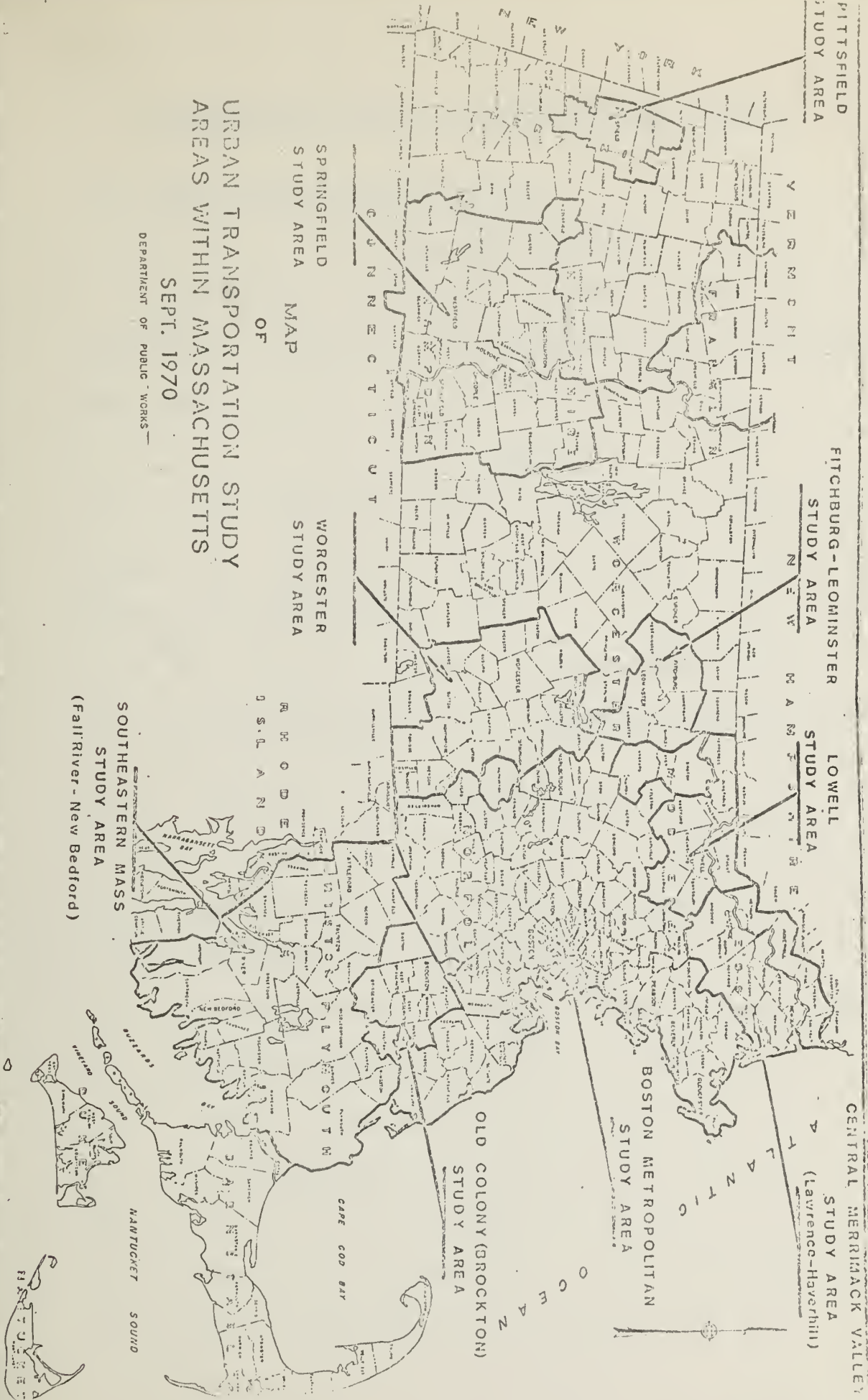
WORCESTER  
STUDY AREA

URBAN TRANSPORTATION STUDY  
AREAS WITHIN MASSACHUSETTS

SEPT. 1970

DEPARTMENT OF PUBLIC WORKS

SOUTHEASTERN MASS  
STUDY AREA  
(Fall River - New Bedford)







MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-0 Urban Transportation Planning

Project Objective

This phase of the work is designed to provide the continuing, comprehensive, cooperative transportation planning process for the urbanized areas.

1970

In 1970, Urban Transportation Planning, covering the following studies, was conducted at the Massachusetts Transportation Planning Center at 80 Broad Street, Boston:

- 8-1-A Boston Metropolitan Area Transportation Study
- 8-1-B Central Merrimack Valley (Lawrence-Haverhill) Area Transportation Study
- 8-1-C Lowell Area Transportation Study
- 8-1-D Old Colony (Brockton) Area Transportation Study
- 8-1-E Boston Transportation Planning Review
- 8-1-F North Shore Planning Review
- 8-2 Southeastern Massachusetts Area Transportation Study
- 8-3 Springfield Area Transportation Study
- 8-4 Worcester Area Transportation Study
- 8-5 Fitchburg-Leominster Area Transportation Study
- 8-6 Pittsfield Area Transportation Study
- 8-7 Comprehensive Transportation Planning for Small Urban Areas
- 8-8 Fringe Parking Facility Planning



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-0 Urban Transportation Planning (Continued)

8-10 1970 United States Census Adaptation Study

Details on each of these studies are covered separately hereinafter.

1971

The 1971 Work Program will consist of the following studies:

8-1 Eastern Massachusetts Area

8-1-A Boston Metropolitan Area Transportation Study

8-1-B Central Merrimack Valley (Lawrence-Haverhill) Area Transportation Study

8-1-C Lowell Area Transportation Study

8-1-D Old Colony (Brockton) Area Transportation Study

8-1-E Boston Transportation Planning Review

8-1-F North Shore Planning Review

8-2 Southeastern Massachusetts Area Transportation Study

8-3 Springfield Area Transportation Study

8-4 Worcester Area Transportation Study

8-5 Fitchburg-Leominster Area Transportation Study

8-6 Pittsfield Area Transportation Study

8-7 Comprehensive Transportation Planning for Small Urban Areas

8-10 1970 United States Census Adaptation Study

Details on each of these studies are covered separately hereinafter.



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1 Eastern Massachusetts Area

1970

There was no cost estimate in the 1970 Work Program for the Eastern Massachusetts Regional Planning Project. Nevertheless, a number was assigned to this item and charges were made against it for work covering outstanding contracts.

For 1971 there is a definite need for an item encompassing the Eastern Massachusetts Regional Planning Project Area. Since the EMRPP is no longer in existence, this item has been called the Eastern Massachusetts Area.

Estimated 1970: \$7,700

1971

The former EMRPP area has been divided into smaller areas in which the continuing transportation planning processes are being conducted independently. However, there is work which must be done for the entire EMRPP area. Until a satisfactory trip table is developed for the whole area, separate traffic assignments for each of the smaller areas would not be meaningful.

The first step in the process, the production of a traffic forecasting process which adequately replicates 1963 travel, will be the item of highest priority during 1971. Due to monetary limitations and the urgency of producing answers as quickly as possible a thorough validity check of the forecasting procedures



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1 Eastern Massachusetts Area (Continued)

has not been attempted. Since both the 24 hour unrestrained and the 3 hour restrained results could be improved, it seems unwise to attempt any additional future assignment processes without first determining whether the method to be used would duplicate the base year travel patterns.

The approach to be tried will be a peak period capacity restrained assignment. The tasks involved in testing the peak period capacity restrained process include: coding networks with new capacities, applying the trip generation equations to base year socioeconomic data to develop 24 hour 1963 trip ends, distributing these trips with the calibrated gravity models factoring these trips to obtain peak period travel, splitting the trips into highway and transit modes, and assigning the trips to links in the transportation system. The trip generation, distribution and modal split models used will be those developed for the Task A Inner Belt Study with some modifications.

If this process is successful, 1990 forecasts will be accomplished using these procedures. It is expected that this work will continue into 1972. Only the cost of the work which is expected to be completed during 1971 is estimated below.

Estimated 1971 Cost: \$155,000

Supervisor: Robert F. Casey





8-1-A BOSTON AREA TRANSPORTATION STUDY

1970

During 1970 the Annual Report for the Boston Area was published. This report included current estimates of population, employment, vehicle ownership and school enrollment as well as a summary of the plans and programs of the state and regional agencies which would materially affect land use or travel patterns. The Report also described the work effort of the continuing comprehensive transportation planning process, the action and reaction concerning the transportation study recommendations, and the utilization of selected transportation facilities in the Boston Area.

During 1970 the Task "A" Study was completed and the two volumes, one prepared by the consultant and one prepared by the Bureau, were submitted to the Federal Highway Administrator.

An assignment of the Task "A" trip table to a network which did not contain either Department of Public Works or City of Cambridge's alignment of the Inner Belt was accomplished during 1970. Due to the priority of other work, no extensive analysis of this assignment was performed.

In the development of the 1970 Work Program it was expected that a great deal of work would be done with the Task "A" output. However, Task "A" did not produce assignments which the Bureau considered worthy of further, more extensive development at the anticipated cost of this effort. Therefore, validation of the 3 hour



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-A BOSTON AREA TRANSPORTATION STUDY (Continued)

assignment process, and a new distribution, modal split, transit assignment and 24 hour and 1 hour highway assignments based on the Department of Public Works' Inner Belt alignment were not attempted.

The 1970 Work Program also contained a substantial item for splitting the former EMRPP area networks and trip tables so that separate and more detailed assignments could be made for each of the areas. However, this item was based on the assumption that a satisfactory 1990 travel forecast would be available. Since the Bureau does not consider either the 24 hour "all-or-nothing" assignments from EMRPP or the 3 hour capacity restrained assignments from Task "A" a proper base for developing more detailed assignments, this work was not accomplished during 1970. Furthermore, this item will not be included in the 1971 Program, since it is expected to take at least another year to produce a satisfactory base trip table for the EMRPP area.

Estimated 1970 Cost: \$80,000

1971

A major item to be accomplished during the year will be the continuing data analysis and comparison between the 1970 Census data as it becomes available and the 1975 and 1990 socioeconomic projections for the Boston Area. This work will be most important



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-A BOSTON AREA TRANSPORTATION STUDY (Continued)

as it will provide the most authoritative guidepost for determining whether the socioeconomic projections of the Eastern Massachusetts Regional Planning Project are acceptable for communities within the Boston area or whether new forecasts will be necessary. Preliminary conclusions are that new socioeconomic forecasts will be necessary.

Another major item is the production and publication of the second Annual Report. This Report will contain the conclusions derived from the comparison of Census data versus EMRPP forecasts in addition to a description of the continuing transportation planning effort, and other elements similar to that included in the first Annual Report.

Until the revised procedures are developed which will allow the Bureau to make new traffic forecasts, the existing procedures must be utilized to produce estimates for current projects. Additional assignments will be run when alternative alignments or new proposals are tested. Tasks include network preparation, plotting and computer runs. Assignment analysis is covered under item 4-7.

A considerable amount of staff time and some computer time is spent in providing information to public, state, regional, national and international agencies and to a lesser extent to private companies and groups. It is expected that this type of activity will continue at a slightly increased level each year.



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-A BOSTON AREA TRANSPORTATION STUDY (Continued)

Preliminary work will be included for fringe parking facilities near Rapid Transit Stations of the Massachusetts Bay Transportation Authority.

Estimated 1971 Cost: \$59,200

Supervisor: Robert F. Casey





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-B Central Merrimack Valley Study Area

1970

During the year several Transportation Coordinating Committee (T.C.C.) meetings have been called but only a few had enough members present to establish a quorum in order to conduct business.

Department personnel have attended the Central Merrimack Valley Regional Planning Commission meetings quite regularly, thereby showing the Department's interest in local matters.

Presentations on the Statewide Highway Transportation Plan and on the National Highway Functional Classification and Needs Study have been made at joint meetings of the T.C.C. and the Regional Planning Commission to inform the area on transportation matters. The 1990 estimated Urban-in-fact limits for this area were submitted for review and comment. The estimated boundary was apparently acceptable as no comments were received.

Estimated 1970 Cost: \$2,050

1971

The publishing of an Annual Review report for this area is a project that will be undertaken. The analysis and manipulation of the 1970 Census Data should provide input for the Annual Review Report. Arrangements for collection of specific data necessary for the continuing transportation planning process by an outside



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-B Central Merrimack Valley Study Area (Continued)

agency through contract will be considered for this area.

The normal work effort involved in the Comprehensive, Continuing, Cooperative planning process throughout the year will include the readjusting, updating and analyzing of the highway network as required along with attending various meetings and writing of reports.

Estimated 1971 Cost: \$18,300

Supervisor: Kenneth A. Wilman



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-C Lowell Study Area

1970

A new approach to establish an active TCC has been put forth to the Northern Middlesex Regional Planning Commission and that is to establish the TCC as a committee of the Regional Commission rather than be independent of the Commission. This plan is in the embryo stage and will require further development.

A presentation of the National Highway Functional Classification and Needs Study was made to the Executive Director of the Commission and his aid enlisted to review the 1990 Urban-in-fact limits. This was accomplished and revisions were made based on the Commission's recommendations.

Department personnel has attended the monthly Regional Commission meetings quite regularly thereby establishing liaison with the communities.

Estimated 1970 Cost: \$1,000



8-1-C Lowell Study Area (Continued)

1971

This next year an effort will be made to develop our scheme to establish the TCC as a committee of the Regional Planning Commission in order to get a better community response to transportation matters.

Arrangements for collection of specific data necessary for the continuing transportation planning process by an outside agency through contract will be considered for this year.

The work program in this area will be centered around the development of socio-economic data from the 1970 Census in order to produce an Annual Report.

The normal course of work involved in the Comprehensive, Continuing, Cooperative planning process throughout the year will include the readjusting, updating and analyzing the highway network as required along with attending various meetings and writing of reports.

Estimated 1971 Cost: \$18,300

Supervisor: Kenneth A. Wilman





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-D Old Colony Study Area

1970

Although the TCC has been inactive this year, liaison with the communities has continued by having the District Planning Engineer attend the Old Colony Planning Council Monthly meetings. Boston personnel have availed their services to the communities by attendance at local board meetings.

A presentation of the National Highway Functional Classification and Needs Study was made to the Executive Director of the Planning Council and the 1990 Urban-in-fact limits were submitted for review and comment.

Estimated 1970 Cost: \$1,000

1971

During the coming year an effort will be made to publish an Annual Review Report based on the 1970 Census data along with an effort to increase our relationship with the Old Colony Planning Council.

Arrangements for collection for specific data necessary for the continuing transportation planning process by an outside agency through contract will be considered for this area.

The normal course of work involved in the Comprehensive, Continuing, Cooperative planning process throughout the year will include the readjusting, updating and analyzing the highway network as required along with attending various meetings



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-D Old Colony Study Area (Continued)

and writing of reports.

Estimated 1971 Cost: \$18,300

Supervisor: Donald Murphy



8-1-E Boston Transportation Planning Review

Project Objective

The Boston Transportation Planning Review has been established by Governor Francis W. Sargent to advise him on transportation within that portion of the Boston metropolitan region bounded by Route 128. Governor Sargent has directed that it be reviewed in concert, with careful attention to its interrelationships and to its impacts upon the full range of metropolitan values.

1970

The primary accomplishment during 1970 has been the creation of a participatory framework for the Planning Review, and the drafting by the steering group of the Study Design for the Boston Transportation Planning Review. A copy is attached to this submission. This work was not performed under the HPR program.



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-E Boston Transportation Planning Review (Continued)

1971

The Study Design for the Boston Transportation Planning Review constitutes a detailed work plan for the entire study, anticipated to cost a total of roughly \$3.5 million. The portion of this cost to be borne by HPR funds subsequent to the Initial Phases (see below) is uncertain, but the Commonwealth is desirous of preserving flexibility in the Work Program at this time to ensure that funds will be available if needed. It is anticipated that the Planning Review will be implemented during two Work Program years. The following deals with projected work during 1971. It is described in Part I, Section III, of the Study Design.

a. Initial Phases. For budget planning purposes, it has been assumed that Federal-state negotiations with respect to the entire Planning Review will occupy the first three months of 1971, and that another three months will be required before a prime contractor is authorized to commence work. The Commonwealth is anxious to make progress, using HPR funds, during this period, and intends to do so by preceeding with these phases during the first half of 1971--the Pre-Contract Phase as negotiations are proceeding, and portions of phase I as the prime contractor is being selected. The current estimate is that the Pre-Contract work will cost \$60,000 and require three months (January-March). The Phase I work that can





8-1-E Boston Transportation Planning Review (Continued)

be completed prior to selection of the prime contractor (April-June) is estimated to cost \$150,000.

Among the work to be accomplished during the Pre-Contract Phase are the following items:

1. Revision of the Study Design document in response to reviews, comments, and modifications requested by the Federal Government, the Governor's Office, and the policy boards of participating public agencies and private groups. The Steering Group and Working Committee of the Boston Transportation Planning Review will be consulted thoroughly and continually during the process of revision.
2. Preliminary sketch planning work, including drafting of proposed refinements of the design and evaluation criteria, development of more precise definitions of the program package alternatives to be designed and evaluated in the Review, definition of standards, and definition of land development trends and goals based upon previous work of the MAPC and other agencies.
3. Establishment of sub-area committees to conduct detailed participatory planning for sub-areas within the Boston Transportation Planning Review study area.
4. Development of a detailed work program for the North Shore Planning Review (see below, 8-1-F), which is to be administered as a sub-area study of the Boston Transportation Planning Review, though beyond the pre-contract phase to be funded separately from the BTPR.
5. Presentation of briefings on the scope, objectives, and mechanisms of the Boston Transportation Planning Review for appropriate state and local officials, interested private groups, and (at public meetings) ordinary citizens.



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-E Boston Transportation Planning Review (Continued)

6. Technical assistance to participating localities and private groups to facilitate their effective participation in the planning review process.
7. Development of detailed plans for the management of the Boston Transportation Planning Review.
8. Negotiation of liaison agreements with other studies that have been conducted or are being conducted in the region, in order to secure optimal integration of the planning review studies with such other studies.
9. Adjustments in the framework for participation to accomodate representation of new interests.
10. General support for the Steering Group and Working Committee as they prepare for and commence their central advisory roles in the Boston Transportation Planning Review.

Approval requested for pre-contract Phase: \$60,000.

Force Account: 0  
Contract Work: \$60,000

Among the work to be accomplished with HPR funds during the early months of Phase I are early stages on each of the following items--described by reference to Study Elements, Part Two, Study Design for the Boston Transportation Planning Review:

- |   |          |
|---|----------|
| 1. Study Element 1--Study Management                            | \$20,000 |
| 2. Study Element 2--Community Liaison &<br>Technical Assistance | \$20,000 |
| 3. Study Element 3--Use of Design & Evaluation<br>Criteria      | \$ 5,000 |
| 4. Study Element 4--Transportation System Design                | \$50,000 |



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-E Boston Transportation Planning Review (Continued)

5. Study Element 6--Land Use & Travel Forecasting	\$50,000
6. Study Element 9--Administrative & Legislative Studies	<u>\$ 5,000</u>
	\$150,000

Approval requested for Phase I: \$150,000

Force Account: 0  
Contract Work: \$150,000

b. Later Phases. It is uncertain at this time whether HPR funds will be required after the prime contractor commences work. This will depend on the outcome of the Federal-state negotiations earlier in the year. At this point, the concern is to avoid commitments that might preclude the use of HPR funds during the second half of 1971.

It is expected that the work accomplished during April through June, though under one-fifth of the dollar total projected for Phase I, will permit reducing the time required for Phase I after selection of the contractor from four months to between two and three months. While Phase I is still in progress, work will commence on Phase II, as described in Part I, Section III of the Study Design. The Study Design calls for Phase II to begin when Phase I is half completed, to run for 13 months, and to cost \$1,902 Million. No work will commence under these later phases until a detailed work program has been submitted and approved by the Federal Highway Administration.





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-1-E Boston Transportation Planning Review (Continued)

Total to be held in reserve for later phases: \$290,000

Summary of Work Program 8-1-E:

Total approval requested:	\$210,000
Total to be held in reserve:	<u>\$290,000</u>
	\$500,000

Supervisor: George L. Wey





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-4 Worcester Study Area (Continued)

Arrangements for collection of specific data necessary for the continuing transportation planning process by an outside agency through contract will be considered for this area.

The Regional Planning Agency has requested the expansion of the urban transportation study to include more of its area. Steps will be taken to intergrate the appropriate items from the statewide studies to satisfy this request.

The normal work effort involved in the Comprehensive, Continuing, Cooperative planning process will include the analyzing, readjusting and updating of the highway network as required along with attending various meetings and writing of reports.

Estimated 1971 Cost: \$88,000

Supervisor: Thomas H. McGrath



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-5 Fitchburg-Leominster Urbanized Area

1970

An Annual Review report for this area was initiated early in 1970 and was completed with printing in the latter part of the year.

The T.C.C. has been fairly active in pursuing regional transportation goals by meeting with the Department of Public Works officials and also aiding in the preparation of the Annual Review Report.

There have been meetings with both the T.C.C. and Regional Planning Commission regarding transportation matters.

A presentation of the National Highway Functional Classification and Needs Study plus the estimated 1990 urban-in-fact limits were presented to the Director of the Massachusetts Regional Planning Commission who in turn had the Commission members review the submission and made comments that were incorporated into the National Study.

Estimated 1970 Cost: \$8,200

1971

The prime work effort this year will be a major updating of the transportation study by contract with a consultant to gather and forecast transportation factors which will probably extend into the 1972 work program and cost somewhere in the vicinity of \$200,000 in total.



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-5 Fitchburg-Leominster Urbanized Area (continued)

Another work effort will be the publishing of the second Annual Review Report based on the 1970 Census data.

The normal work effort involved in the Comprehensive, Continuing, Cooperative planning process throughout the year will include the readjusting, updating and analyzing of the highway network as required along with attending various meetings and writing of reports.

Estimated 1971 Cost: \$63,200

Supervisor: Thomas H. McGrath



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-6 Pittsfield Urbanized Area

1970

The T.C.C. in this area is one of the most active, having participated in the gathering of data for the Annual Review report which was published this year. The report showed that the growth of the area closely followed the forecast made by the Pittsfield Comprehensive Transportation report.

A presentation of the Statewide Highway Transportation Plan was made at a T.C.C. meeting to which many interested citizens attended to give their views on transportation matters.

A presentation of the National Highway Functional Classification and Needs Study along with the estimated 1990 Urban-in-fact limits was made to the T.C.C. and Regional Planning Commission.

An update of dwelling units was begun this year but was found to exceed the manpower and time that could be allowed for the return gained; therefore the task was completed for the City of Pittsfield alone and then discontinued.

Estimated 1970 Cost: \$9,600





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-6 Pittsfield Urbanized Area (Continued)

1971

The coming year will again find us in the process of preparing another Annual Review report, only this time the 1970 Census should supply a more accurate base to make comparisons.

The normal work effort involved in the Comprehensive, Continuing, Cooperative planning process throughout the year will include the readjusting, updating and analyzing of the highway network as required along with attending various meetings and writings of reports.

The existing transportation planning procedures developed in previous work will be revised to conform more closely to a standard set established for all transportation study areas. The establishment of a set of uniform procedures will help reduce the considerable time and expense of data collection and provide continuity and greater compatibility of results from different study areas. The results of the procedures will be verified by estimating present day traffic and checking the results against present day data.

Estimated 1971 Cost: \$39,000

Supervisor: Paul N. Chapman



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-7 Comprehensive Transportation Planning for Smaller Urban Areas

1970

During the year an O&D survey was completed in the Williamstown-North Adams area in order to supply updated travel data for use in this small urban area transportation study.

Negotiations were begun earlier in the year with a Consulting firm to do the necessary comprehensive planning for all the Small Urban Areas to support TOPICS, and it is anticipated that a contract will be signed early in the following year.

Estimated 1970 Cost: \$20,000

1971

Comprehensive planning to support TOPICS for all the eligible small urban areas should be the main work effort this year.

Estimated 1971 Cost: \$230,000

Supervisor: Kenneth A. Wilman



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-10 United States Census 1970

1970

For each of the Urbanized Area Transportation Studies the use of the 1970 Census data in the Standard Transportation B.P.R. - Census package will be by a table of equivalents between traffic zone units and census units of blocks, block groups, enumeration districts and census tracts.

Work was started on the table of equivalents using pre-enumeration copies of the Metropolitan Map Series of the 1970 Census. This was checked with the later Metropolitan Map Series.

Minor adjustments were made in traffic zone boundaries to conform to new highway layouts, redevelopment areas and at locations where blocks have been split by the original traffic zone boundaries. It is estimated that two-thirds of the table of equivalents will be prepared ready for key punching at the end of the year.

In conjunction with the Department of Community Affairs and personnel from several other agencies a substantial portion of the detailed work of expanding the Address Coding Guide to a Geographic Base File was completed for concentrated sections



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-10 United States Census 1970 (Cont.)

1970

of the Urbanized Areas. The Geographic Base File is also known as the Dual Independent Map Encoding (DIME) system.

The first count tapes from the 1970 Census are now generally available. The tapes for Massachusetts are now in the process of being obtained. The data is preliminary, but is useful in providing picture of the changes in the data since the last census. It will also provide a check-point for making adjustments.

Estimated 1970 Cost: \$40,000

1971

Work will be completed on the tables of equivalents between the traffic zones and census area units of blocks, block groups, enumeration districts and census tracts for each urbanized area. This will be prepared in a form for the B.P.R. - Census package for transportation planning presently scheduled to become available in 1972.





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

8-10 United States Census 1971 (Cont.)

1971

The Census data in the 2nd through 5th count tapes will be available in 1971. The data will be used to begin updating of the existing base data for the various urban studies and to get a better 1970 statistical picture based upon Census data that has been more thoroughly checked and corrected. A file management system will have to be obtained to process the Census data. It can also be used for any other large size file such as the road inventory.

Estimated 1971 Cost: \$25,000

Supervisor: Walter H. Kondo



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

9-1 Accident Report by Systems

Project Objective

The purpose of studying highway accidents is related to the three functions of--planning, operation and research. Accident data can be used to develop and improve highway needs. Secondly, accident data can reveal deficiencies and effectiveness in design and can measure improvement at plagued areas. Accident data can also relate accidents to highway, vehicle and human factors to provide insight into the interrelationship of these elements for the purpose of improving the highway transportation system.

1970

During 1970 material was compiled of accidents happening throughout the Commonwealth on the various highway systems in order to complete Table TA-1 as described in Instructional Memorandum 50-7-66 from the Bureau of Public Roads.

Estimated 1970 Cost: \$500

1971

It is planned to develop a procedure manual for guidance and record covering the preparation and coordination of all elements of the TA-1 Table. Preparation of the TA-1 Table for 1971 submission to the Federal Highway Administration will be accomplished.

Estimated 1971 Cost: \$7,000

Supervisor: Charles Agrillo



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

9-2 Interstate System Accident Research Study

1970

During 1970 the study compiled accident statistics for the following sections of Interstate Routes:

Routes I-95 and 1 (South of Boston).  
Routes I-95 and 1 (North of Boston)  
Routes I-195 and 6 (Fall River - New Bedford)  
Routes I-495 and 110 (Chelmsford-Westford-Littleton)  
Routes I-91 and 5 (Deerfield to Vermont State Line)  
Routes I-495 and 85 (Southboro-Hudson)  
Routes I-495 and 110 (Amesbury-Haverhill)  
Routes I-495 and 110 (Clinton-Boxborough)

Estimated 1970 Cost: \$9,000

1971

During 1971 the work of compiling accident statistics on the Interstate System in Massachusetts will continue on the same sections and routes designated in 1970.

Estimated 1971 Cost: \$7,000

Supervisor: Victor J. Cantone



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

11-1 Revised Interstate Cost Estimate

1970

The Interstate Cost Estimate was brought up to date and submitted by the Department to the Federal Highway Administration.

Estimated 1970 Cost: \$150,000

Supervisor: Charles E. Whitcomb

1971

No work contemplated.





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

11-2 New Transportation Developments

1970

Data was collected and a report prepared for public distribution on "Inventory of Service Facilities and Highway Access for Massachusetts Airports." This inventory emphasized the interdependence of the different modes of transportation and presented pertinent facts on the facilities and features of 34 general service public airports with an appraisal of the highway access of each.

Estimated 1970 Cost: \$20,000

1971

Using new data obtained in the Logan Airport Travel Study completed in 1970 in cooperation with Massachusetts Bay Transportation Authority, Massachusetts Port Authority, Massachusetts Turnpike Authority, the City of Boston, and the Urban Mass Transportation Administration, the ground transportation needs for the airport will be reanalyzed.

Estimated 1971 Cost: \$25,000

Supervisor: M. Kaplovitz



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

11-3 Goods Movement Study

1970

Questionnaires have been designed and distributed to approximately 500 common carrier truck operators throughout the State.

A preliminary report on part of the questionnaire has been made analyzing truck company special problems related to highway conditions and usage. The highway districts have distributed and collected the questionnaires and the returns are approximately 50% complete. Call back rates are high and while cooperation from the districts and the trucking companies is excellent - returns are slow but steady. The Directory has been well received and has generated request from many agencies.

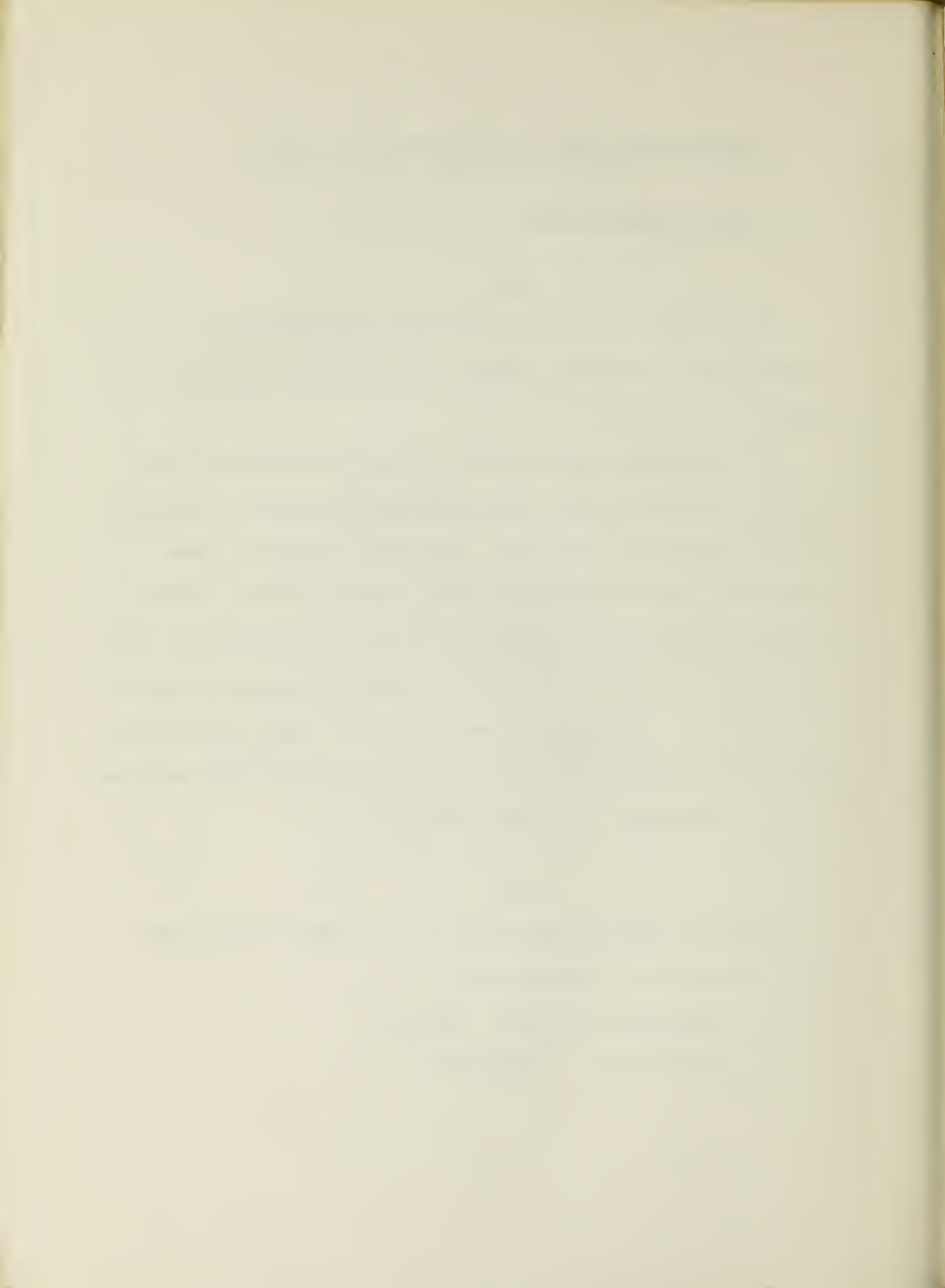
Estimated 1970 Cost: \$18,000

1971

Analysis will continue and a final report on this phase of the study will be made in 1971.

Estimated 1971 Cost: \$10,000

Supervisor: M. Kaplovitz



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

11-4 National Highway Functional Classification and  
Needs Study

1970

During 1970, the following activities were undertaken:

1) The work program as specified in Manual B of the National Transportation Planning Study being conducted by the fifty states in cooperation with the U. S. Department of Transportation, Federal Highway Administration, Bureau of Public Roads. Manual B is the highway portion of a comprehensive set of transportation manuals which the U. S. Department of Transportation has prepared to assess the current conditions and future needs in all domestic modes.

The manual provides background data, definitions, criteria, procedures, and data submittal instructions for the conduct of the study.

The classification phase of the study encompasses all existing mileage plus that needed to satisfy 1990 demands. Classification data to be submitted are similar to those reported for the 1968 functional classification. Needs evaluation involves use of sampling, and the functionally classified system mileage will be the universes for the expansion of the sampled data.

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MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

11-4 National Highway Functional Classification and  
Needs Study (Continued)

The objective of the study is to provide reliable data upon which consideration of future highway financing and responsibility can be used.

2) Preparation and publication of a more detailed report on the results of the 1968 National Highway Classification Study.

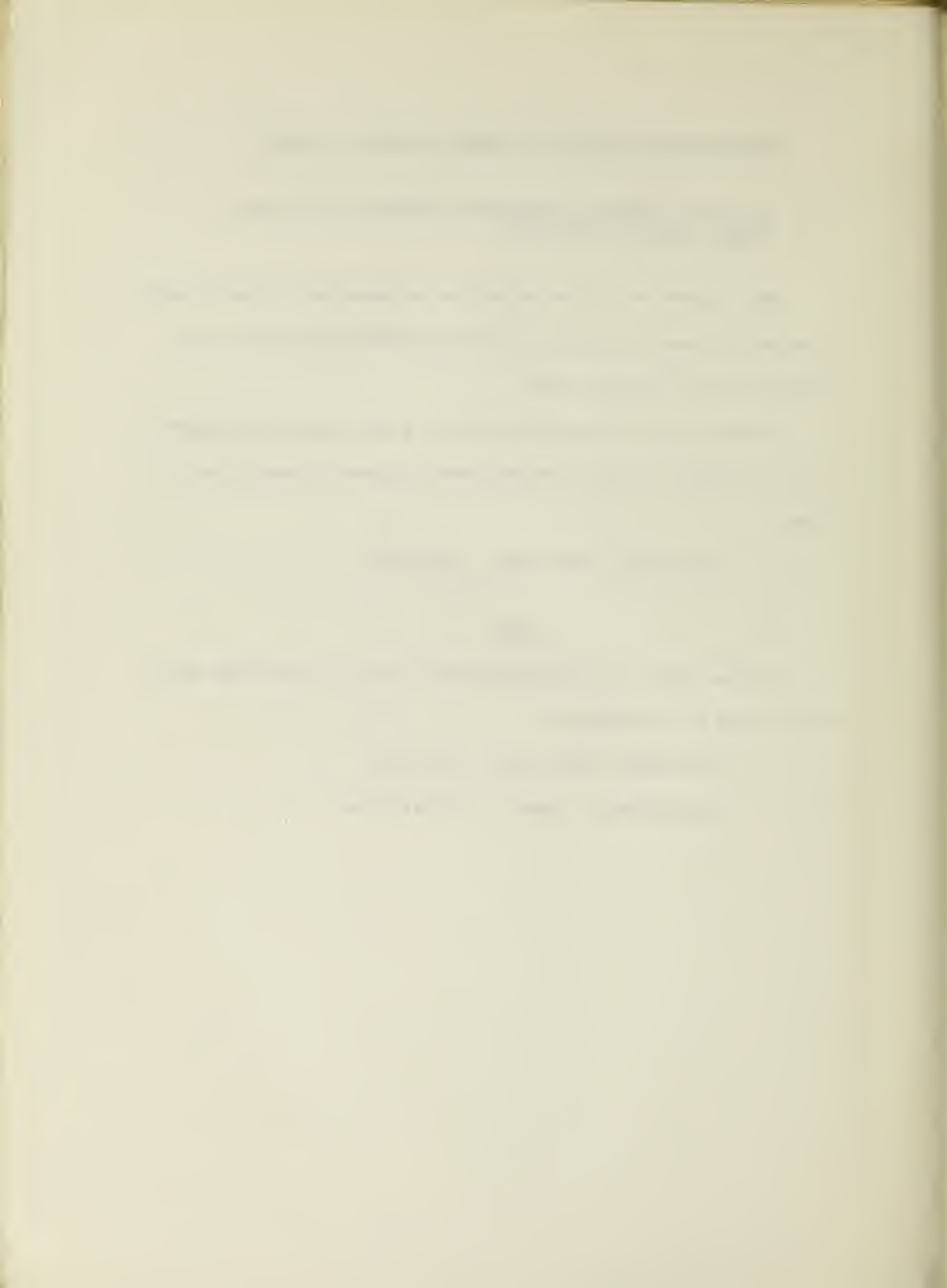
Estimated 1970 Cost: \$200,000

1971

During 1971, it is anticipated that the previous year's activities will continue.

Estimated 1971 Cost: \$225,000

Supervisor: James F. O'Halloran





MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART I

11-6 Effect Of MBTA South Shore Extension On Southeast  
Corridor Travel Patterns

1971

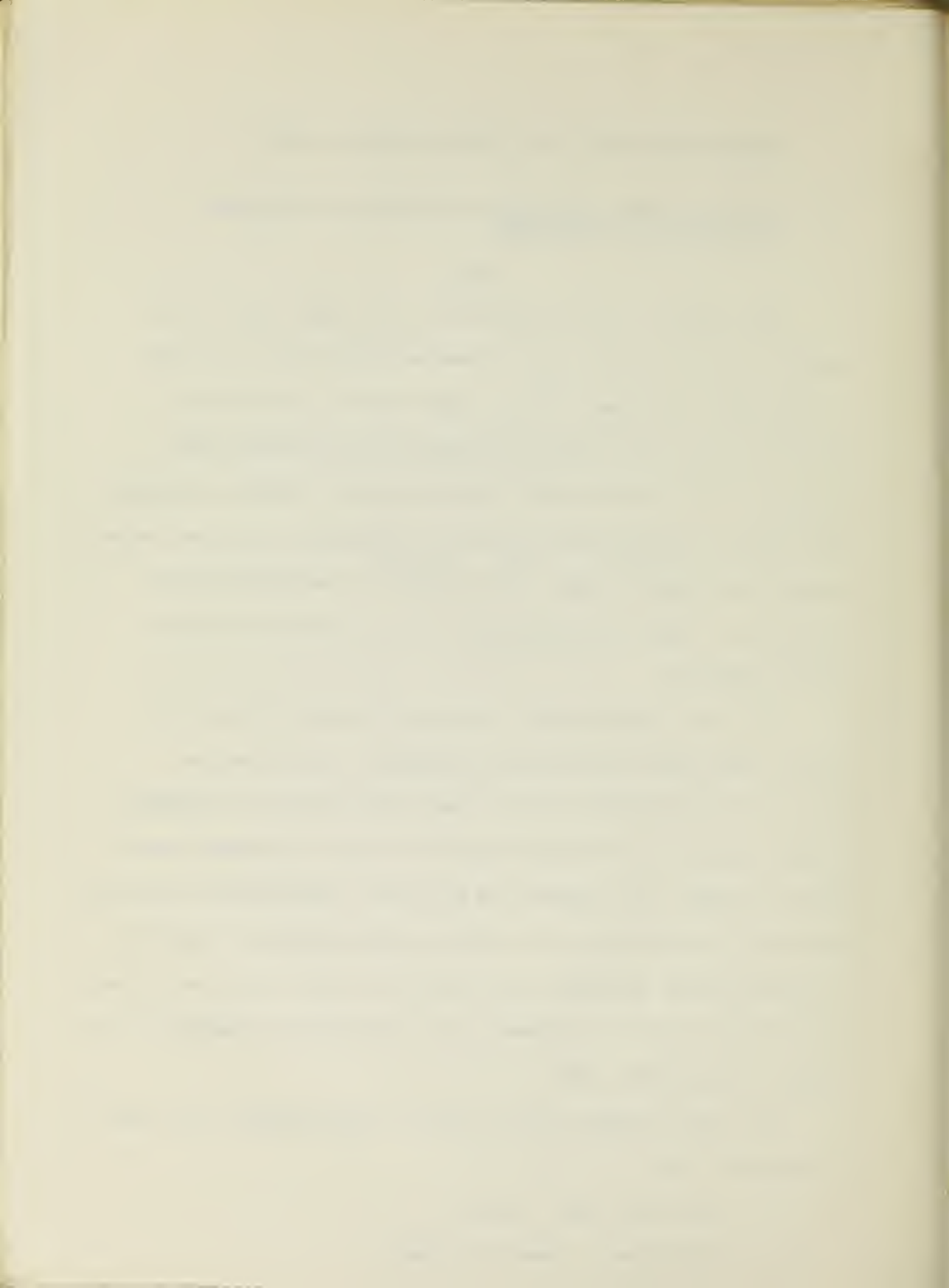
The opening of the first stage of the MBTA South Shore Rapid Transit Line will occur sometime during 1971. In order to determine the impact of the rapid transit extension on corridor travel the Bureau of Transportation Planning and Development has established a traffic volume, vehicle occupancy and vehicle classification counting program for the South Shore. Directional traffic counts will be taken at approximately 50 locations. Vehicle occupancy will also be taken at nine of these locations.

After the rapid transit extension to Quincy Center is opened these same counts will be repeated. An extensive analysis of the differences in these before-and-after highway counts combined with before-and-after transit passenger counts which the MBTA will conduct and evaluate, hopefully will provide important information on the travel pattern changes caused by a rapid transit extension. The results of this study could have significant bearing on future rail rapid transit proposals in the Boston Metropolitan Area.

The cost estimate for this work is for analysis and report preparation only.

Estimated Cost: \$4,000

Supervisor: Robert F. Casey



MASSACHUSETTS HPR-1 (6) WORK PROGRAM - PART II

CALENDAR YEAR 1971





